

## **ABSTRACT OF THE DISCLOSURE**

Methods and apparatus for temperature modification of selected body regions including an induced state of local hypothermia of the brain region for neuroprotection. A heat exchange catheter is provided with heat transfer fins projecting or extending outward from the catheter which may be inserted into selected blood vessels or body regions to transfer heat with blood or fluid in the selected blood vessels or body regions. Another aspect of the invention further provides methods and apparatus for controlling the internal body temperature of a patient. By selectively heating or cooling a portion of the catheter lying within a blood vessel, heat may be transferred to or from blood flowing within the vessel to increase or decrease whole body temperature or the temperature of a target region. Feed back from temperature sensors located within the patient's body allow for control of the heat transfer from the catheter to automatically control the temperature of the patient or of the target region within the patient.

The apparatus may include a blood channeling sleeve that directs body fluid over a heat exchanger where the body fluid's temperature is altered, and then is discharged out the distal end of the sleeve to a desired location, for example, cooled blood to the brain for neuroprotection. The catheter may be used alone or in conjunction with other heat exchangers to cool one region of a patient's body while heating another.